IN THE CLAIMS:

Please amend the claims as indicated below:

1. (Currently Amended) A method for traffic engineering in a network-based communication system, the method comprising the steps of:

determining, in response to a request, whether any path of a plurality of predetermined paths meets at least one requirement corresponding to the request, wherein the plurality of predetermined paths are determined by substantially maximizing a carried demand on a network using at least traffic demand estimates, ~~and~~ network topology information, and a current load measurement, wherein said current load measurement is measured at a source node, and by performing routing for the substantially maximized carried demand; and

if a given path meeting the at least one requirement is found, attempting to create a connection utilizing the given path.

2. (Original) The method of claim 1, wherein the carried demand comprises a total amount of demand that can be carried in the network.

3. (Original) The method of claim 1, wherein the at least one requirement comprises a destination address and a bandwidth.

4. (Original) The method of claim 1, further comprising the steps of:

determining the traffic demand estimates based at least in part on previously measured traffic demands or historical traffic demands; and

determining network topology by using information from link-state routing.

5. (Original) The method of claim 1, further comprising the steps of:

substantially maximizing the carried demand using at least the traffic demand estimates and the network topology;

performing routing for the substantially maximized carried demand, thereby determining a plurality of resultant paths; and

storing the plurality of resultant paths as the predetermined paths.

6. (Original) The method of claim 1, further comprising the step of:

refusing the connection request if there are no paths in the plurality of predetermined paths meeting the at least one requirement or when the connection utilizing the given path is unavailable.

7. (Original) The method of claim 1, wherein:

the network topology comprises nodes interconnected through edges;

the request is made by a source node;

the method further comprises the steps of:

determining whether a designed load between the souree node and a destination node is greater than a measured load between the source and destination nodes;

when the designed load between the souree node and the destination node is greater than a measured load between the souree node and the destination node, pruning edges that do not have a first available bandwidth from the network, thereby creating a first pruned network; and

when the designed load between the souree and a destination is not greater than a measured load between the souree and destination, pruning edges that do not have a second available bandwidth from the network, thereby ereating a first pruned network.

8. (Original) The method of claim 7, wherein the first bandwidth is zero and the second bandwidth is a predetermined trunk reservation.

9. (Original) The method of claim 7, wherein:

the steps of determining whether a designed load, pruning edges that do not have a first available bandwidth from the network, and pruning edges that do not have a second available bandwidth from the network are performed prior to the step of determining, in response to a request, whether any path of a plurality of paths meets at least one requirement; and

the method further comprises performing, if a given path meeting the at least one

requirement is not found, the following steps:

pruning edges that do not have a first available bandwidth from the first pruned network to create a second pruned network;

computing shortest path from the source node to the destination node in the second pruned network; and

attempting to create a connection on the shortest path.

10. (Original) The method of claim 5, wherein:

the step of maximizing further comprises the steps of:

obtaining a threshold that maximizes a number of connections that can be accepted; and

adjusting traffic demand for each of a plurality of node pairs in the network until the carried demand is substantially maximized; and

the step of performing routing further comprises the step of minimizing a total bandwidth-length product subject to a plurality of constraints including edge capacity constraints and path-assignment constraints.

11. (Original) The method of claim 5, wherein the step of maximizing further comprises the step of maximizing the carried demand using at least traffic demand estimates and a graph of the network, subject to a plurality of first constraints.

12. (Original) The method of claim 11, wherein the plurality of first constraints comprise: (1) demand assigned to all paths for a selected node pair is greater than or equal to a demand corresponding to the selected node pair multiplied by a number to be maximized; (2) demand assigned to all paths traversing a selected edge is less than or equal to a capacity of the selected edge; (3) the demand assigned to a path is greater than or equal to zero; and (4) the number to be maximized is between zero and one.

13. (Original) The method of claim 5, wherein the step of performing routing further comprises the step of performing routing for the substantially maximized carried demand,

subject to a plurality of second constraints.

14. (Original) The method of claim 13, wherein the plurality of second constraints comprise: (1) demand assigned to all paths for a selected node pair is greater than or equal to a demand corresponding to the selected node pair multiplied by a number to be maximized; (2) demand assigned to all paths traversing a selected edge is less than or equal to a bandwidth used by the selected edge; (3) the bandwidth used by a selected edge is less than or equal to a capacity of the selected edge; and (4) the demand assigned to a path is greater than or equal to zero.

15. (Original) The method of claim 5, wherein the step of maximizing comprises the step of maximizing a product of an expectation of a real number to be maximized and a demand, subject to having a mean provisioned demand exceed an offered load with a predetermined probability.

16. (Original) The method of claim 5, wherein the step of performing routing further comprises the step of minimizing a total bandwidth-length product subject to a plurality of constraints including path-assignment constraints.

17. (Original) The method of claim 16, where the path-assignment constraints comprise constraining a sum of an amount of demand in units of path capacity to be greater than a product of a threshold and a sum of an average demand and a product of a number indicating a distance from a standard deviation and a standard deviation of a normal distribution function.

18. (Original) The method of claim 5, wherein the step of performing routing further comprises the step of minimizing a total bandwidth-length product subject to a plurality of constraints, where the plurality of constraints include constraining end-to-end blocking probability for a node pair to be less than a predetermined amount.

19. (Original) The method of claim 5. wherein the step of performing routing further comprises the step of determining a threshold minimum capacity assigned for a node pair

that will meet a given blocking probability.

20. (Original) The method of claim 5, wherein the step of performing routing further comprises the step of minimizing a total bandwidth-length product subject to a plurality of constraints including edge capacity constraints for which demand per node pair is assigned a threshold capacity.

21. (Currently Amended) An apparatus for traffic engineering for in a network-based communication system, the apparatus comprising:

a memory; and

at least one processor, coupled to the memory;

the apparatus operative:

to determine, in response to a request, whether any path of a plurality of predetermined paths meets at least one requirement corresponding to the request, wherein the plurality of predetermined paths are determined by substantially maximizing carried demand on a network using at least traffic demand estimates, ~~and~~ network topology information, and a current load measurement, wherein said current load measurement is measured at a source node, and by performing routing for the substantially maximized carried demand; and

if a given path meeting the at least one requirement is found, to attempt to create a connection utilizing the given path.

22. (Currently Amended) An article of manufacture for traffic engineering in a network-based communication system, the article of manufacture comprising:

a machine readable medium containing one or more programs which when executed implement the steps of:

determining, in response to a request, whether any path of a plurality of predetermined paths meets at least one requirement corresponding to the request, wherein the plurality of predetermined paths are determined by substantially maximizing carried demand on a network using at least traffic demand estimates, ~~and~~ network topology information, and a current load measurement, wherein said current load measurement is measured at a source node,

and by performing routing for the substantially maximized demand; and

if a given path meeting the at least one requirement is found, attempting to create a connection utilizing the given path.

23. (Original) A method for traffic engineering for a network-based communication system comprising a network having nodes interconnected through edges, and wherein a source node requests a connection to a destination node, the method comprising the steps of:

determining a first shortest path between the source node and destination node;

pruning edges not having a first available bandwidth from the network, thereby creating a first pruned network;

computing a second shortest path between the source node and the destination node using the first pruned network;

if a length of the second shortest path is equivalent to a length of the first shortest path, attempting to create a connection on the second shortest path; and

if a length of the second shortest path is not equivalent to a length of the first shortest path, performing the following steps:

pruning edges not having a second available bandwidth from the first pruned network, thereby creating a second pruned network;

computing a third shortest path between the source node and destination node using the second pruned network; and

attempting to create a connection on the third shortest path.